

Abstract

There is provided a semiconductor device capable of ensuring a complete enhancement-mode operation and 5 realizing a power transistor excellent in the low-distortion, high-efficiency performance. On a surface of a substrate (1) composed of single crystal GaAs, a second barrier layer (3) composed of AlGaAs, a channel layer (4) composed of InGaAs, a third barrier layer (12) composed 10 of InGaP and a first barrier layer (11) composed of AlGaAs are stacked in this order, while placing in between a buffer layer (2). Relation of $\chi_1 - \chi_3 \leq 0.5 * (Eg_3 - Eg_1)$, where χ_1 is electron affinity of the first barrier layer (11), Eg_1 is a band gap of the same, χ_3 is electron 15 affinity of the third barrier layer (12), and Eg_3 is a band gap of the same, is satisfied between the first barrier layer (11) and the third barrier layer (12).